Claims

1. An object detection system characterized by comprising:

radar detection means (2) that detects an object using a radar,

image detection means (3) that detects an object using an image, and

collating means (4) that performs collation between a detection result of the radar detection means (2) and a detection result of the image detection means (3) so as to determine whether an identical object is detected by the radar detection means (2) and the image detection means (3); the object detection system being characterized in that

the collating means (4) performs a first collation between an object (n_m) detected by the radar detection means (2) in a present collation and an object (n3_pre) that has been determined as being detected by the radar detection means (2) and the image detection means (3) in a previous collation; performs a second collation between an object (n_i) detected by the image detection means (3) in a present collation and an object (n3_pre) that has been determined as being detected by the radar detection means (2) and the image detection means (3) in the previous collation when it is determined that the identical object is detected by the radar detection means (2) and the image detection means (3) in the previous collation; and determines whether the radar detection means (2) and the image detection means (3) detect the identical object (n3') based on the first and the second collations.

2. The object detection system according to claim 1, characterized in that the collating means (4) performs a third collation between objects (n_m - n3') detected by the radar detection means (2) in the present detection, which are obtained by excluding the object (n3') determined as have been detected by the radar detection means (2) and the image detection means (3), and objects (n_i - n3') detected by the image detection means (3) in the present detection, which are obtained by excluding the object (n3') determined as have been detected by the radar detection means (2) and the image detection means (3) such that it is determined whether the identical object (n3'') is detected by the radar detection means (2) and the image detection means (3).

3. The object detection system according to claim 2, characterized in that the collating means (4) determines all fusion objects (n3) in the present collation by adding the number of fusion objects (n3') determined based on the first and second collation (S1) to that of the fusion objects (n3'') determined based on the third collation (S20 to S25) to determine all fusion objects (n3) in the present collation (S3), and the collating means (4) determine all independent objects (n1, n2) in the present collation by excluding the fusion objects (n3) from the objects (n_m, n_i) detected by the radar detection means (2) or the image detection means (3) in the present detection.

4. The object detection system according to any one of claims 1 to 3, characterized in that the radar detection means (2) comprises at least one of a millimeter-wave radar and a laser radar.

5. The object detection system according to any one of claims 1 to 4, characterized in that the image detection means (3) comprises a stereo camera.

6. A method of detecting an object in a system (1) including

radar detection means (2) that detects an object using a radar;

image detection means (3) that detects an object using an image; and

collating means (4) that performs collation between a detection result of the radar detection means (2) and a detection result of the image detection means (3) so as to determine whether an identical object is detected by the radar detection means (2) and the image detection means (3), the method being characterized by comprising the steps of:

performing a first collation (S10, S11) between an object (n_m) detected by the radar detection means (2) in a present collation and an object (n3_pre) that has been determined as being detected by the radar detection means (2) and the image detection means (3) in a previous collation;

performing a second collation (S12, S13) between an object (n_i) detected by the image detection means (3) in a present collation and an object (n3_pre) that has been determined as being detected by the radar detection means (2) and the image detection means (3) in the previous collation when is determined that the identical object is detected by the radar detection means (2) and the image detection means (3) in the previous collation; and

determining whether the radar detection means (2) and the image detection means (3) detects the identical object (n3') based on the first and the second collations (S14).

7. The method according to claim 6, characterized by further comprising the step of

performing a third collation between objects (n_m - n3') detected by the radar detection means (2) in the present detection, which are obtained by excluding the object (n3') determined as have been detected by the radar detection means (2) and the image detection means (3), and objects (n_i - n3') detected by the image detection means (3) in the present detection, which are obtained by excluding the object (n3') determined as have been detected by the radar detection means (2) and the image detection means (3) such that it is determined whether the identical object (n3'') is detected by the radar detection means (2) and the image detection means (3) (S20 to S25).

8. The method according to claim 7, characterized by further comprising the steps of

adding the number of fusion objects (n3') determined based on the first and second collation (S1) to that of the fusion objects (n3'') determined based on the third collation (S20 to S25) to determine all fusion objects (n3) in the present collation (S3); and

excluding the fusion objects (n3) from the objects (n_m, n_i) detected by the radar detection means (2) or the image detection means (3) in the present detection to determine all independent objects (n1, n2) in the present collation (S3).

9. The method according to any one of claims 6 to 8, characterized in that the radar detection means (2) comprises at least one of a millimeter-wave radar and a laser radar.

10. The method according to any one of claims 6 to 9, characterized in that the image detection means (3) comprises a stereo camera.